

2nd International Conference and Exhibition on Pharmacognosy, Phytochemistry & Natural Products

August 25-27, 2014 DoubleTree by Hilton Beijing, China

Antihemolytic activity of 30 herbal extracts (impact of extraction methods) on mice erythrocytes

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Oxidative damages, caused by reactive oxygen species, have been observed in various diseases such as thalassemia and sickle cell anemia. These damages can lead to the hemolysis of erythrocytes. In such conditions, antihemolytic activity of therapeutic agents can be of great interest. 30 herbal extracts were prepared by 3 extraction methods i.e. percolation, Soxhlet and ultrasonically assisted extraction and their antihemolytic activity was examined on mice erythrocytes. Extracts of five plants, including *S. ebulus* (flower/Soxhlet), *R. fruticos* (leaf/percolation), *A. julibrissin* (flower/ultrasonic), *C. melo* (fruit/percolation), and *A. absinthium* (aerial parts/percolation) displayed a weak activity but *D. racemosa* (aerial parts/Soxhlet), *S. ebulus* (flower/ultrasonic), *S. ebulus* (flower/percolation), *A. absinthium* (aerial parts/ultrasonic), *A. absinthium* (aerial parts/Soxhlet), *A. julibrissin* (leaf/Soxhlet), *C. caspius* (aerial parts/polyphenol), *S. tournefortii* (aerial parts/polyphenol), and *G. verum* (aerial parts/percolation), exhibited potent antihemolytic activity. *S. tournefortii* (aerial parts/percolation) showed no activity. Other extracts were found to intensify the hemolysis of erythrocytes. Antihemolytic activity of extracts were compared to that of vitamin C as the control ($IC_{50}=235 \pm 5.26 \mu g mL^{-1}$). Nine extracts were found to be more potent than vitamin C. The extracts of *G. verum* (aerial parts/percolation) and *S. tournefortii* (aerial parts/polyphenol) were revealed to be most potent ones, with $IC_{50}=1.32$ and $2.08 \mu g mL^{-1}$, respectively. There were statistically significant differences between these groups and control ($P<0.001$). The results indicated that some extracts can effectively inhibit erythrocytes hemolysis in a dose dependent manner (0.25 to $4 mg mL^{-1}$). This effect was concentration-dependent. These plants could be used as easily accessible source of natural antioxidants in pharmaceutical industry.

Biography

Yaghoub Safdari is a PhD student from Tabriz university of Medical Science (Tabriz, Iran). Up to now, he has published 6 papers with ISI value in reputed journals throughout the world as well as one paper in a Scopus-indexed journal.

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